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(58) Field of search

A4V

Selected US specifications from IPC sub-class A45D

(54) Nail file and lubricant for use therewith

(57) A file for finger nails has a lateral concave surface carrying abrasive. Preferably the shape of the concave surface approximates to the curvature of a finger nail as shown in Figure 3. A cushioning layer, e.g. of synthetic foam, may be interposed between the abrasive layer and the substrate of the file.

Also disclosed is a lubricant for use with a nail file comprising water, glycerine and a germicide.

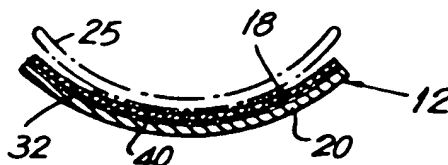
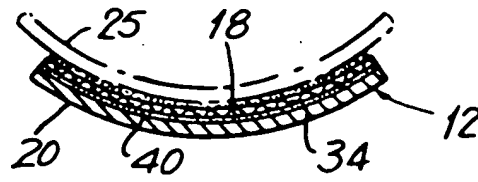
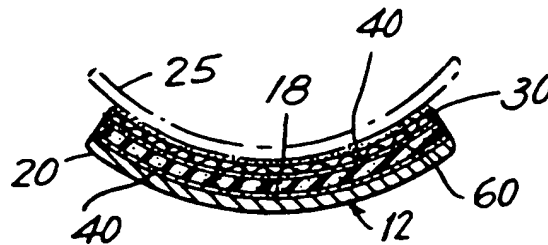
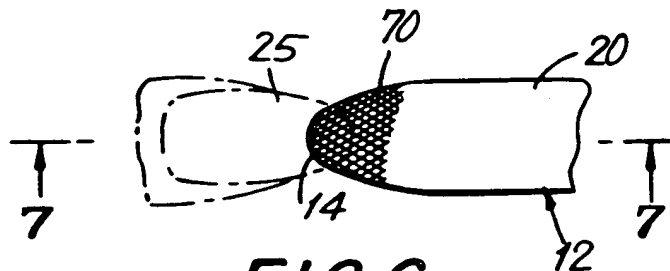
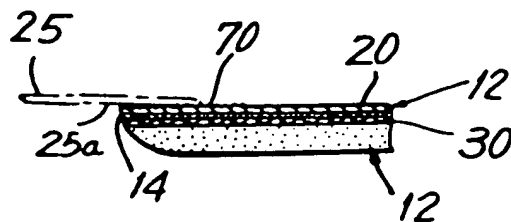


FIG. 3

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**FIG. 4****FIG. 5****FIG. 6****FIG. 7**

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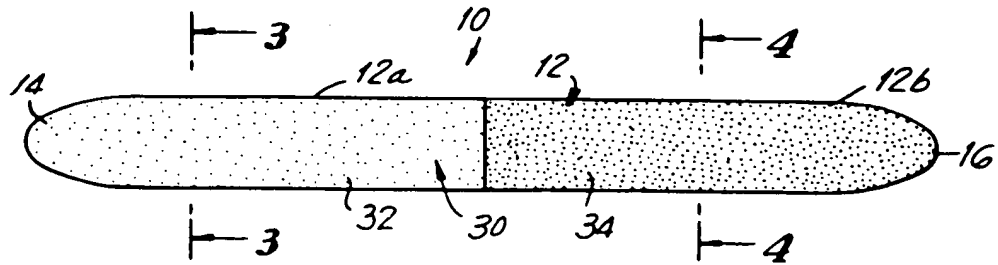


FIG. 1

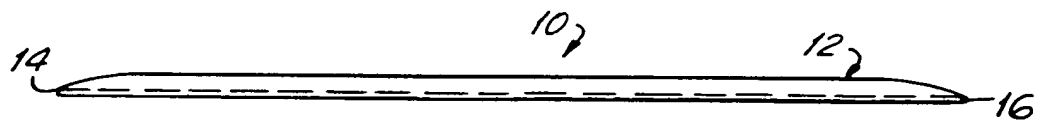


FIG. 2

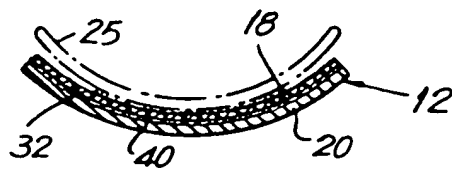


FIG. 3

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FIG. 8

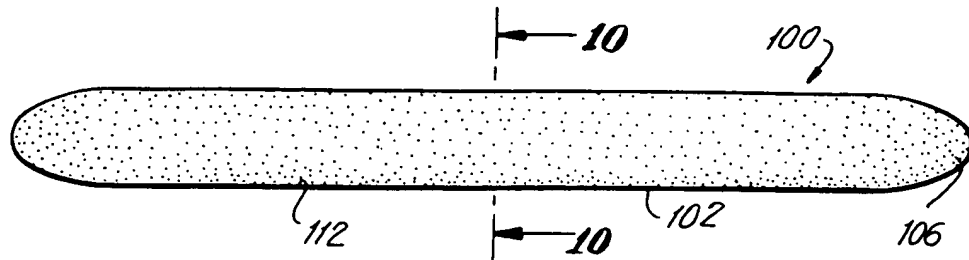


FIG. 9

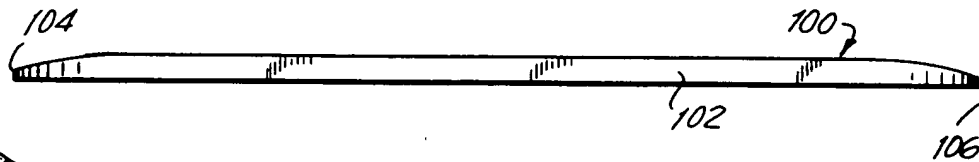


FIG. 11

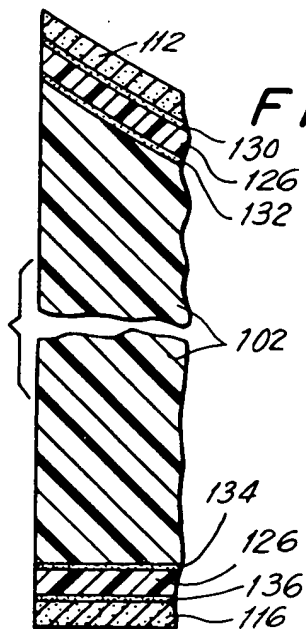
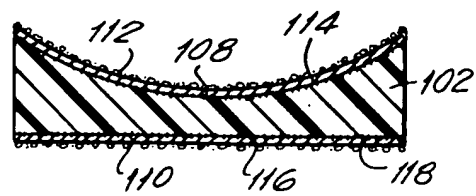


FIG. 10



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DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference is first made to Figs. 1 through 4 which depict a curved fingernail file, generally indicated at 10, constructed in accordance with a preferred embodiment of the present invention. Nail file 10 includes an elongated substrate 12 having a first end 14 and a second end 16.

As best depicted in Figs. 3 and 4, substrate 12 is curved along the length thereof in the lateral direction so as to define a concave surface 18 and a convex surface 20 in cross-section. The shape of concave surface 18 is such as to essentially conform to the convex surface of a fingernail 25.

An abrasive material, generally indicated at 30, suitable for the filing of fingernails, is affixed to concave surface 18 of substrate 12. In a preferred embodiment, substrate 12 includes a first portion 12a including end 14, and second portion 12b including second end 16 of substrate 12. Abrasive material 30 includes a fine abrasive material 32 coupled to first portion 12a of substrate 12 and a coarse abrasive material 34 coupled to second portion 12b of substrate 12 for effecting different filing action.

Abrasive materials 32 and 34 are preferably fixed to concave surface 18 of substrate 20 by means of an adhesive material 40. It is noted that abrasive materials 32 and 34 will assume the curved contour of concave surface 18 of substrate 12 when bonded thereto through adhesive material 40.

Substrate 12 is preferably formed from a lightweight metal material such as aluminium. Where the present invention is utilized in a motorized filing machine, heat build-up may be a problem, causing user discomfort. The aluminium substrate 12 will act as a heat-sink thereby drawing heat away from the portion of the file which is being utilized for nail filing purposes. It is noted that substrate 12 may also be formed of other materials such as a thermoplastic material which is either molded or heat formed.

Ends 14 and 16 of substrate 12 and also the corresponding ends of abrasive material 30 are rounded such as in an elliptical shape to further accommodate filing of the nails. End 16 of substrate 12 may be wider than end 14 of substrate 12 to form a wedge configuration to provide two different contours at the respective ends of substrate 12 to accommodate each size of fingernail and their corresponding shapes.

It is preferred that concave surface 18 approximate the contour of both the top surface of the fingernail as well as the shape to which the ends of the fingernails will be filed. By applying a curved nail file to a curved fingernail, significantly more abrasive surface contacts the fingernail than is possible with conventional flat files. This application of a curved surface to a curved fingernail results in a smoother filing, since a flat file produces a series of facets on the nail which must be carefully smoothed out and blended. The present invention, on the other hand, provides a smooth blending without the need for further filing. In addition, since the curved surface places more abrasive in contact with the fingernails, considerable time can be saved in filing

the fingernails. Also, the top surface of the fingernails can be readily filed since the contour of the present nail file substantially conforms thereto.

Reference is now made to Fig. 5 which depicts an alternate embodiment of the present invention. Like reference numerals in Figs. 1 through 4 correspond to like parts in Fig. 5. In Fig. 5, a foam layer 60 is inserted intermediate substrate 12 and abrasive material 30. Foam material 60 is bonded to concave surface 18 of substrate 12 through adhesive 40 which in turn is bonded to abrasive material 30 through an additional application of adhesive 40. Preferably, the foam has a thickness of about 0.1mm and a soft durometer. The sandwiching of foam 60 between abrasive material 30 and substrate 12 permits even greater adaptation of the abrasive contour to that of the fingernails, thus producing an even smoother contour blending when filing the fingernails.

Referring now to Figs. 6 and 7, it is seen that the convex side 20 of substrate 12 at end 14 thereof may include a further abrasive portion 70 which can be utilized for filing the undersurface 25a of fingernail 25. Where substrate 12 is aluminium, abrasive convex surface 70 can be formed as a knurled or scored surface thereon. Alternatively, where substrate 12 is aluminium or plastic, an additional piece of abrasive material similar to abrasive material 30 can be affixed to convex side 20 of end 14. Convex abrasive portion 70 can be used on the underside of the fingernail to shape such surface or to remove any burrs or other rough edges that may result from filing the edge of the nail. Such convex abrasive surfaces are particularly useful on nail tips or artificial fingernails, to remove the burrs therefrom when the edges thereof are filed.

Reference is now made to Figs. 8 through 10 wherein a curved fingernail file, generally indicated at 100 and constructed in accordance with a further embodiment of the invention is depicted. Nail file 100 includes a first end 104 and a second end 106.

As best depicted in Fig. 10, substrate 102 has a substantially uniform cross-section along the entire length thereof. One surface of substrate 102 is curved along the length thereof in a lateral direction so as to define a concave surface 108. Substrate 102 is further defined by an opposed flat surface 110 along the entire length thereof. As described above, concave surface 108 conforms substantially to the convex surface of a fingernail. The asymmetric cross-section of substrate 102 is best obtained by molding or heat forming a thermoplastic resin to yield a plastic material, which is preferably semi-rigid.

An abrasive material, generally indicated at 112, suitable for the filing of fingernails, is affixed to concave surface 108 using an adhesive layer 114. In general, abrasive material 116 can be formed of abrasive grains bonded to paper or mylar. A second abrasive material 116 is adhered to flat surface 110 by adhesive 118. Abrasive materials 112 and 116 will assume the contours of surfaces 108 and 110, respectively, when bonded thereto by an adhesive material. Alternatively, abrasive layers 112 and 116 can be adhered to thermoplastic substrate 102 at the

SPECIFICATION

Curved fingernail file, lubricant and method of filing

BACKGROUND OF THE INVENTION

5 The present invention is generally directed to a fingernail file, a lubricant and a method of filing using a lubricant and, in particular, to a curved fingernail file and lubricant and method of filing which permit smoother and more effective filing of

10 fingernails in a shorter period of time. Conventional fingernail files and emery boards generally include a flat abrasive surface for filing purposes even though the fingernails and nail edges on which they will be used are curved. Such nail

15 files and emery boards generally include an abrasive paper laminated to a flat substrate made of wood, compressed paper, plastic, foam or the like. Also available in the prior art is a flat metal nail file which includes a knurled or scored surface which

20 defines the abrasive surface. Such metal nail files do not wear out as rapidly as paper nail files. The flat, prior art nail files tend to produce a series of facets on the fingernails which require the additional steps of rounding and smoothing.

25 A further disadvantage of using nail files is that it is difficult to obtain smooth nails by dry filing. Moreover, the coarseness of the file causes dust to collect.

Accordingly, it is desired to provide an improved
30 fingernail file which is curved to define a concave surface which approximates the contour of curved fingernail surfaces and to further provide a method of using the file in combination with a fingernail lubricant in order to effect smoother, more efficient
35 and less expensive filing.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a curved fingernail file is provided. The
40 nail file includes an elongated substrate, at least one surface of which is curved along the length thereof in a lateral direction to define a concave surface. An abrasive material is coupled to the concave surface and conforms thereto in order to permit the filing of
45 fingernails.

In a preferred embodiment, the concave surface defined by the substrate approximates the contour of fingernails. The two ends of the substrate may also be rounded. The substrate is preferably formed
50 from a rigid material such as aluminium or plastic. Both a fine abrasive material and a coarse abrasive material may be coupled to different portions of the concave surface for effective nail filing.

In an alternative embodiment, a foam layer is
55 interposed between the concave surface of the substrate and the abrasive material to enhance the adaptation of the contour of the abrasive material to that of the fingernails. An additional abrasive material may be coupled to the opposite side of the
60 substrate which can be utilized for filing the undersurface of the nail.

In a still further embodiment, a lubricant is used in filing to effect a smoother, more efficient and cleaner method of nail filing.

65 Accordingly, it is an object of the present

invention to provide a curved fingernail file.

Another object of the present invention is to provide an improved fingernail file which includes a concave surface.

70 A further object of the present invention is to provide a curved fingernail file which permits enhanced nail filing with improved results.

A still further object of the present invention is to provide a curved fingernail file which reduces the
75 amount of time necessary to perform satisfactory filing of the fingernails.

Still a further object of the present invention is to provide an improved method of using a lubricant to obtain smoother, cleaner and more efficient nail
80 filing.

Yet another object of the present invention is to provide an improved fingernail file which includes a concave surface with abrasive material which has a shape approximating the contour of fingernails.

85 Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described, and a method comprising the several steps and the relation of one or more of such steps with respect to each of the others thereof which will be exemplified
90 in the method hereinafter disclosed and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompany drawings, in which:

Fig. 1 is a top plan view of a curved fingernail file constructed in accordance with a preferred
100 embodiment of the present invention;

105 Fig. 2 is a side elevational view of the fingernail file depicted in Fig. 1;

Fig. 3 is an enlarged sectional view taken along line 3—3 of Fig. 1, shown in place against a fingernail;

110 Fig. 4 is an enlarged sectional view taken along line 4—4 of Fig. 1, shown in place against a fingernail;

Fig. 5 is an enlarged sectional view similar to Fig. 4 showing an alternate embodiment of the present
115 invention;

Fig. 6 is a top plan view of a fingernail and the end portion of a curved fingernail file constructed in accordance with another embodiment of the present invention;

120 Fig. 7 is a sectional view taken along line 7—7 of Fig. 6;

Fig. 8 is a top plan view of a curved fingernail file constructed in accordance with another alternate preferred embodiment of the invention;

125 Fig. 9 is a side elevational view of the fingernail file depicted in Fig. 8;

Fig. 10 is an enlarged sectional view taken along line 10—10 of Fig. 8; and

130 Fig. 11 is an exploded partial sectional view of an alternate fingernail file of the type depicted in Fig. 8.

time of molding. Abrasive materials 112 and 116 can be the same or different materials.

In another alternate embodiment of the invention, a foam layer 126 is interposed between abrasive materials 112 and 116, respectively, and plastic material 102. Foam layer 126 adapts to concave surface 108 which substantially conforms to the configuration of a fingernail and also makes the nail file comfortable to hold and use. A second foam layer 126 conforms to flat surface 110. Foam layers 126 are uniform in thickness and conform to the shape of thermoplastic substrate 102 as described. In an especially preferred embodiment, the foam layer is about 0.04 inches thick. Foam layers 126 are adhered to each side of substrate 102 using an adhesive material 130, 132, 134 and 136, which may be the same or different in each case. The adhesive material may be glue, double-sided tape or the like and is preferably pressure sensitive. Accordingly, the structure of curved fingernail file is abrasive material 112, adhesive material 130, foam layer 126, adhesive material 132, substrate 102, adhesive material 134, foam layer 126, adhesive material 136 and abrasive material 116. Alternatively, a foam layer can be used on only one side of substrate 102.

Ends 104 and 106 of substrate 112 and also the corresponding ends of abrasive materials 112 and 118 are rounded to accommodate filing of the nail. Fingernail file 100 functions substantially as described above.

In operation, each of the fingernail files of the invention are preferably used with a lubricant to obtain "wet filing". "Wet filing" has a profound impact on abrasive life and smoothness of the filed fingernails. In particular, the use of a lubricant preserves the nail file, reduces scratching of the nail when the surface is filed in preparation for application of an artificial nail and eliminates the build up of stress points on the nail. The fingernail files of the instant invention are especially adapted to be used in a wet filing process due to the concave surface.

A lubricant which can be used for "wet filing" is preferably a blend of deionized water, glycerin and germicide. The glycerin is a wetting agent and assists the water in its function as a lubricant. Color can be added for appearance purposes. The active ingredients of the lubricant are the glycerin and the germicide and these are used in a total amount of between about 2 and 10% by weight of the lubricant, more preferably, between about 4 and 8%. In an especially preferred embodiment, the lubricant includes about 96% water, 3.8% glycerin, 0.18% Germeven II (an anti-fungicidal agent) and optionally 0.02% FEC #2 red dye.

A benefit of utilizing a lubricant is the elimination of filing dust from the immediate environment of the manicurist and client. In addition to being a benefit of cleanliness and convenience, this is also a health benefit.

Further, by applying lubricant and then filing using a concave surface, a smoother surface is obtained in less time. Since nail abrasion is minimized, nail strength is correspondingly increased. Moreover, the lubricant prevents the

abrasive surface of the nail file from being clogged with filed material and thus prematurely ineffective.

The present invention provides an improved nail file and lubricant which achieves each of the benefits and advantages noted above. The file is easy and inexpensive to manufacture and is readily disposable. Nail filing is facilitated by the present invention with improved results and a shortening of the time necessary to file nails.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above article without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

CLAIMS

1. A fingernail file comprising an elongated substrate, said substrate, having at least one surface that is curved along the length thereof in a lateral direction to define a concave surface, and abrasion means coupled to said concave surface for permitting the filing of fingernails.

2. The fingernail file as claimed in claim 1, wherein the shape of said concave surface approximates the curvature of a fingernail.

3. The fingernail file as claimed in claim 2, wherein said substrate is rigid.

4. The fingernail file as claimed in claim 1, further comprising cushioning means interposed between said substrate and said abrasion means for cushioning said abrasion means.

5. The fingernail file as claimed in claim 1, wherein said substrate defines a flat surface on the side thereof opposite said concave surface, and wherein an abrasive material is affixed to said flat surface.

6. A fingernail file comprising an elongated substrate having first and second rounded ends, said substrate being curved in cross-section defining a concave surface which approximates the contour of a fingernail, a sheet of abrasive material and coupling means for coupling said sheet of abrasive material to said concave surface.

7. The fingernail file as claimed in claim 6, wherein said substrate defines a flat surface on the side thereof opposite said concave surface, and wherein an abrasive material is affixed to said flat surface.

8. A lubricant for use with a nail file for the purpose of wet filing fingernails comprising: between about 2 and 10% by weight of water; and between about 90 and 98% by weight of glycerin and a germicide.

9. The lubricant as claimed in claim 8, wherein the lubricant comprises:

about 96% by weight of water; about 3.8% by weight of glycerin; and

about 0.2% by weight of an anti-funicidal agent.
10. A method for wet filing fingernails using a curved nail file and a lubricant comprising:
applying a lubricant containing between about 2

5 and 10% by weight of water and between about 90 and 98% of glycerin and a germicide to a curved nail file; and
filing a fingernail using the curved nail file.

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